

What is claimed is:

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1. An intravascular catheter, comprising:  
an elongate shaft having a proximal end, a distal end, and a distal tip, the elongate  
shaft including:  
an inner liner;  
a second layer disposed over the inner liner, the second layer extending  
from the proximal end of the shaft to a distal terminus;  
a third layer disposed over the second layer; and  
a fourth layer disposed over the third layer, the fourth layer including a  
proximal end and a distal end.
- SAC*
2. The catheter in accordance with claim 1, wherein the distal tip has a  
shapable length, and wherein the distal terminus is set back from the distal end of the  
shaft a distance equal to or greater than the shapable length.
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3. The catheter in accordance with claim 2, wherein the distal terminus is  
about 4 millimeters from the distal end of the shaft.
4. The catheter in accordance with claim 3, wherein the shape of the distal tip  
can be heat set.
5. The catheter in accordance with claim 4, wherein the shape of the distal tip  
can be heat set by steam.

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6. The catheter in accordance with claim 3, wherein the inner liner comprises polytetrafluoroethylene.
7. The catheter in accordance with claim 3, wherein the second layer comprises polyether block amide.
8. The catheter in accordance with claim 3, wherein the third layer comprises a coil.
9. The catheter in accordance with claim 8, wherein the coil comprises stainless steel.
10. The catheter in accordance with claim 8, wherein the coil comprises nickel alloy.
11. The catheter in accordance with claim 8, wherein the coil comprises a non-ferrous metal.
12. The catheter in accordance with claim 3, wherein the fourth layer comprises polyether block amide.

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13. The catheter in accordance with claim 3, wherein the distal end of the shaft has an outside diameter that is less than the outside diameter of the proximal end of the shaft.
14. The catheter in accordance with claim 3, wherein the distal end of the shaft has a durometer that is less than that of the proximal end of the shaft.
15. The catheter in accordance with claim 3, further comprising a radiopaque marker.
16. The catheter in accordance with claim 15, wherein the distal end of the third layer is secured by the radiopaque marker.
17. The catheter in accordance with claim 3, wherein the second layer further comprises a second segment.
18. The catheter in accordance with claim 17, wherein the second segment is disposed at the inner liner between the distal terminus and the distal end of the shaft.
19. An intravascular catheter, comprising:  
an elongate shaft having a proximal end, a distal end, and a distal tip having a shapable length, the elongate shaft including:  
an inner liner;
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a second layer disposed over the inner liner, the second layer extending from the proximal end of the shaft to a distal terminus, wherein the distal terminus is set back from the distal end of the shaft a distance equal to or greater than the shapable length;

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a third layer disposed over the second layer; the third layer including a single coil region near the distal end of the shaft and a multiple coil region near the proximal end of the shaft; and

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a fourth layer disposed over the third layer, the fourth layer including a proximal end and a distal end, wherein the durometer at the proximal end is greater than the durometer at the distal end.

20. The catheter in accordance with claim 19, wherein the distal terminus is about 4 millimeters from the distal end of the shaft.

21. The catheter in accordance with claim 20, wherein the shape of the distal tip can be heat set.

22. The catheter in accordance with claim 21, wherein the shape of the distal tip can be heat set by steam.

23. The catheter in accordance with claim 21, wherein the inner liner comprises polytetrafluoroethylene.

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24. The catheter in accordance with claim 21, wherein the second layer comprises polyether block amide.
  25. The catheter in accordance with claim 21, wherein the third layer comprises a coil.
  26. The catheter in accordance with claim 25, wherein the coil comprises stainless steel.
  27. The catheter in accordance with claim 25, wherein the coil comprises nickel alloy.
  28. The catheter in accordance with claim 25, wherein the third layer comprises a non-ferrous metal.
  29. The catheter in accordance with claim 21, wherein the fourth layer comprises polyether block amide.
  30. The catheter in accordance with claim 21, wherein the distal end of the shaft has an outside diameter that is less than the outside diameter of the proximal end of the shaft.

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31. The catheter in accordance with claim 21, further comprising a radiopaque marker.
  32. The catheter in accordance with claim 31, wherein a distal end of the third layer is secured by the radiopaque marker.
  33. The catheter in accordance with claim 21, wherein the second layer further comprises a second segment.
  34. The catheter in accordance with claim 33, wherein the second segment is disposed at the inner liner between the distal terminus and the distal end of the shaft.
  35. A method for manufacturing a catheter, comprising the steps of:  
providing a mandrel;  
extruding an inner liner over the mandrel, the inner liner defining a shaft having a proximal end, a distal end, and a distal tip that is shapable;  
laminating a second layer over the inner liner from a distal terminus to the proximal end; wherein the distal terminus is set back from the distal end of the shaft a distance equal to or greater than the shapable length;  
disposing a third layer over the second layer;  
extruding a fourth layer over the third layer, the fourth layer including a proximal end and a distal end, wherein the durometer at the proximal end is greater than the durometer at the second end; and

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removing the mandrel.

36. The method in accordance with claim 35, wherein the step of disposing a second layer over the inner liner further comprises disposing a second segment over the inner liner.
37. The method in accordance with claim 35, wherein the step of extruding a fourth layer over the third layer further comprises forming a taper within the fourth layer wherein the distal end of the shaft has an outside diameter that is less than the outside diameter of the proximal end of the shaft.
38. The method in accordance with claim 35, wherein the step of extruding a fourth layer over the third layer includes gradient extrusion.
39. The method in accordance with claim 35, wherein the distal end of the third layer is secured by a radiopaque marker.
40. The method in accordance with claim 35, wherein the step of laminating a second layer of the inner liner further comprises disposing a second segment on the inner liner between the distal terminus and the distal end of the shaft.

41. An intravascular catheter, comprising:  
an elongate shaft having a proximal end, a distal end, and a distal tip, the elongate  
shaft including:  
an inner liner;  
a second layer disposed over the inner liner, the second layer extending  
from the proximal end of the shaft to a distal terminus;  
a second segment extending from the distal terminus to the proximal end;  
a third layer disposed over the second layer; and  
a fourth layer disposed over the third layer, the fourth layer including a  
proximal end and a distal end.

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